

COPPER COLORED JEWELRY AND METHOD OF MANUFACTURING COPPER COLORED JEWELRY

Background of the Invention

The present invention relates to jewelry and a method of manufacturing jewelry, which is more particularly to jewelry made of copper alloy.

Conventionally, copper alloy containing 0.5 through 5 weight percentage of gold, so called, "Shakudo" is one of Japanese traditional metals used for manufacturing "Katana no Tsuba" which is Japanese sword guards and "Kanzashi" which is Japanese style hairpins, and it has a beautiful light pink color in original.

However, as conventional "Shakudo" contains copper at a rate of 95 weight percentage or more, it is easily oxidized and discolored after daily use, so it is rarely used as material for manufacturing modern jewelry such as rings and pendants. Besides, after conventional "Shakudo" is oxidized and turned in black or dark purple, beauty of "Shakudo" is all lost and is hardly recovered in original color because it is oxidized up to the inside totally.

Moreover, "Shakudo" has a nature of softness and stickiness compared to other Jewelry metals such as K14, K18 or platinum and therefore it is also rarely used as a material to form shape of jewelry solely because solidness is required for jewelry of daily use. Consequently, when "Shakudo" is used for modern jewelry manufacturing, it is common to be mixed with gold alloy material 21 such as a ring 20 shown in Fig. 3. It was often called "Mokume jewelry" by embodying a pattern of wood grain 22 in the tarnished portion of "Shakudo".

Furthermore, "Shakudo" sometimes is used as a decoration part of a flat shaped jewelry such as brooches, but it also produces another problems. Because of nature difference of materials, a so-called inlaying technique must be applied for manufacturing such a jewelry. For example, a decorating part of "Shakudo" is inserted

into a concave inlaid portion formed in a main body made of other materials such as gold alloy by pressing using a jewelry tool such as a hammer and then polished very hard together. It is not only difficult to inlay "Shakudo" securely in the other material unless shape of jewelry is very flat, but also the inlaid portion protrudes in long term use because of nature difference of both metals.

Summary of the Invention

The inventor of the present invention invented that it is possible to keep "Shakudo" in a color of original beautiful light pink if the copper alloy contains strikingly less copper than the conventional "Shakudo", when it is polished after it is oxidized and discolored dark. It also provides unique jewelry by changing color from pink to dark brown under the oxidation is proceeded.

It is also provides a method of manufacturing new type of "Shakudo" jewelry, not only flat shape jewelry such as brooches but also curved shaped jewelry such as rings, pendants, earrings etc.

That is, the object of the present invention is to use copper alloy which contains 6 to 15 weight percentage of copper and 94 to 85 weight percentage of gold, which is a light pink color in original and a fancy chocolate color after oxidized, a light pink color is recovered by cleaning process including washing and polishing surface.

Further, another object of the present invention is to apply flux before a decorating portion made of above-mentioned copper alloy is inserted into inlaying part formed in main body made of the other materials such as gold, silver, platinum. Therefore, the decorating portion made of above-mentioned copper alloy can be inlaid securely in the inlaying part formed in main body of jewelry, even though main body of jewelry is formed in curved shape.

Therefore, jewelry of the present invention is consisted a main body with inlaid portion and an decorating part made of copper alloy which is inserted into foresaid inlaid portion, and copper alloy which contains 6 to 15 weight percentage of

copper and 94 to 85 weight percentage of gold.

With composition of copper alloy of the present invention, jewelry has a beautiful light pink color which is original of copper color, then jewelry is oxidized in only surface and very slowly to dark color, which provides enjoyment of changing color of jewelry from pink to chocolate.

Further, jewelry of the present invention is selected a type of foresaid jewelry from a group of including rings, pendants, necklaces, earrings, cuff buttons, brooches, tie tacks, bangles, buckles, chokers, bracelets, watch band and glasses which are formed in curved shape in some part of jewelry.

With type of jewelry of the present invention, any form of jewelry can be provided using copper alloy which is changeable color from light pink of original copper color to dark brown of fancy chocolate as a unique decoration

Furthermore, A method of manufacturing jewelry of the present invention is composed of forming a main body of jewelry having an inlaid portion, forming a decorating part made of foresaid copper alloy which is adjusted into foresaid inlaid portion, a flux is applied joint surface of foresaid inlaid portion and/ or surface of decorating part, inserting a decorating part into foresaid inlaid portion of main body by pressing, a main body of jewelry is heated and soldering is applied.

With the method, flux which is applied between joint surface of inlaid portion and decorating part is evaporated spontaneously from heating generated when soldering after decorating part is inserted. Therefore, the evaporated flux forms a slight gap (space) between inlaid portion and decorating part, the solder flows naturally into the gap (space), so that decorating part made of copper alloy is attached main body securely and which also made a possible to form copper alloy jewelry having curved shape.

Still further, jewelry of the present invention is characterized that cleaning process is applied to the surface of foresaid decorating part of copper alloy after color is changed to dark brown by oxidization in a certain time of use, and finishing process includes washing and polishing at least.

With the process, chocolate color of oxidized copper alloy is recovered easily to light pink original copper color and users of present invention jewelry enjoys the change of color of copper.

Brief Description of the Drawings

Fig. 1 is a drawing showing jewelry relating to the preferred embodiment of the present invention,

Fig. 2 (a) through (d) are drawings illustrating the method of manufacturing jewelry relating to the preferred embodiment of the present invention, and

Fig. 3 is a drawing showing conventional jewelry using "Shakudo".

Detailed Description of the Preferred Embodiments

Referring now to the drawings, preferred embodiments of the present invention are described more particularly. Incidentally, in the description, a ring represents A jewelry of the preferred embodiment of the present invention.

Fig. 1 is a drawing showing jewelry relating to the preferred embodiment of the present invention. Jewelry 1 has a main body 11 formed as a flat ring shape. Main body 11 has an inlaid portion (not shown in the drawing) which is capable of receiving a decorating part. As shown in Fig.1, two decorating parts 12 are already installed in the inlaid portion.

Main body 11 can be made of any materials which are common in manufacturing jewelry, such as K12, K14, K18 gold alloy, silver and platinum alloy. Additionally, Main body 11 has a concave inlaid portion (not shown in the drawing) sized adjust to the decorating parts 12. Main body 11 is formed by common manufacturing method of manufacturing jewelry such as lost wax casting, press cutting, and hand making.

The decorating part 12 is installed in the inlaid portion of main body 11 by

inlaying technique (so-called "Zogangihou"), that is composed of copper alloy contains 6 to 15 weight percentage of copper and 94 to 85 weight percentage of gold. The decorating part 12 has a light pink color initially and the copper alloy is only oxidized on its surface very slowly, because the copper alloy contains much more gold (less copper) than the conventional "Shakudo".

Therefore, the decorating part 12 can recover the original light pink color by cleaning when the surface is turned to dark brown. Conventional metal forming method can be applied to form the decorating part 12, for example, an ingot of the copper alloy is adjusted to a preferable thickness by roller and the plate of copper alloy is formed to a preferable shape by press cutting or hand.

The main body 11 also has decorating surface 13 which adds another decoration of jewelry 1. The decorating surface 13 is not essential for jewelry 1 and it's formed in many conventional jewelry manufacturing technique such as engraving, enameling, matte finishing or many small diamonds setting.

Fig. 2 shows a method of manufacturing a jewelry relating of the present invention. Fig. 2 (a) and 2 (b) are sectional views in the event of inlaying a decorating part 12 to main body 11. Fig. 2 (c) is a top vie of Fig.2 (b) from a direction of C for showing a method of placing solder on the border between decorating part 12 and main body11 on the surface of main body11. And Fig. 2 (d) shows the condition that the solder flowed inward and reached into the joint surface of decorating part 12 and main body11.

For the first step of the method of manufacturing a jewelry, a few of inlaid portions of concave shape are formed in main body 11 by foresaid manufacturing method which are adjusted to the shape of decorating part 12. Also, a few of decorating parts 12 are obtained by foresaid manufacturing method, which are composed of copper alloy contains 6 to 15 weight percentage of copper and 94 to 85 weight percentage of gold.

For the next step, each of decorating parts 12 are inserted into each of inlaid portions 14 formed in main body 11 as shown in Fig. 2 (a).

In this step, flux 15 are pre-applied joint surfaces of the inlaid portions 14 and/or the decorating part 12. Flux 15 are preferably liquid type but not limited to special type of flux.

For inserting the decorating part 12 into the inlaid portions 14, jewelry making tool such as hammer are used, the decorating part 12 are pushed very hard to the direction of an arrow B. Consequently, flux 15 applied on the joint surface are sandwiched between the decorating part 12 and the inlaid portions 14.

For the third step, each joint surfaces between the decorating part 12 and the main body 11 are soldered. As shown in Fig. 2 (c), solders 16 are placed in parallel on the surface of the border of the main body 11 and the decorating part 12, then a main body 11 is heated using jewelry making tool such as a burner. Solder 16 has no limit to any special type.

When main body 11 are heated by a burner, the flux 15 applied to the joint surfaces are evaporated. Consequently, a slight gap are emerged at the foresaid joint surfaces and melted solder 16 flows into the gap spontaneously with the help of so called the interfacial effect of the flux. Therefore, even though the decorating part 12 and the main body 11 are formed to the curbed shape, the decorating parts 12 are securely installed in the main body 11 and are prevented from protrusion for long time daily use.

For further step of the present invention, that is the method of recovering the original light pink color. Cleaning treatment can be applied to jewelry 1 of this invention and the decorating part 12 turned dark brown by oxidization is recovered it's original light pink color by this process.

The cleaning method of jewelry 1 is consisted, for example of, acid washing, ion washing, rubber polishing, knife polishing, charcoal rubbing, buffing etc, the cleaning method can be applied repeatedly for darken decorating part 12 after long time daily use.

By applying foresaid polishing processes, the decorating part 12 is recovered it's original light pink color of the copper alloy, because only the surface is oxidized in

jewelry 1, and the cleaning process can be applied repeatedly after the surfaces of the decorating part 12 turns dark brown.

The present invention is not limited to the above-mentioned embodiments. For example, only a flat type of ring is described above but any type and any form of jewelry such as tiffany type of ring, pendants, necklaces, earrings, cuff buttons, brooches, tie tacks, bangles, buckles, chokers, bracelets, watch band, glasses and the like can be presented by this invention naturally.

Further, materials of main body of jewelry is not to foresaid embodiments. For example, not only gold alloy is used for main body of jewelry, but any type of material is used as long as it bears for soldering.